

REMARKS

Before commenting in detail upon the rejections in the Office Action, the undersigned respectfully wishes to draw the Examiner's attention to two minor errors in the Office Action Summary. Firstly, although the Summary correctly notes that claims 1-38 are pending in this application, claim 38 is not mentioned in any of Sections 5, 6 and 7 of the Summary. Having regard to page 2 of the Office Action, the undersigned presumes that claim 38 should have been included among the rejected claims, and the discussion below proceeds on this basis. Secondly, it is noted that the check box in Section 13 of the Summary has not been checked to acknowledge the claim to the priority of the provisional application referenced in the first paragraph of this application, and it is requested that the Examiner indicate acceptance of this priority claim.

The amendments to the specification are confined to insertions of publication numbers corresponding to applications originally identified only by serial or application number, and to a correction of a minor clerical error. It is believed that the need for all of these amendments will readily be apparent from the context.

The amendments to the drawings insert into Figure 2 reference numerals for the support member 18 and the electrode 24 which are referred to in Paragraph [0055] of the specification but not shown in the original Figure 2. Since Paragraph [0055] states that the support member 18 and the electrode 24 in Figure 2 are identical to the corresponding integers shown in Figure 1, comparison of original Figures 1 and 2 shows unambiguously that the changes in Figure 2 are correct. No new matter is introduced by this amendment.

The aforementioned Office Action stated that claims 1-38 were pending in this application, that claims 1-6, 26, 27 and 30-37 were allowed, that claims 7-12, 14-20, 23-25, 28, 29 and 38 (as corrected - see above) were rejected, and that claims 13, 21 and 22 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The applicants now amend 7 and 19, cancel claim 20 and effect a consequential amendment in claim 21 in response to the rejections

in the Office Action; the applicants also amend claims 13 and 16 to correct minor clerical errors therein.

In view of the rather complex claim structure of this application, it is believed to be more convenient for both the Examiner and the undersigned attorney to discuss the claims in numerical order rather than strictly in the order in which they are treated in the Office Action.

As already noted, claims 1-6 stand allowed.

Claims 7-9 stand rejected under 35 USC 102(e) as anticipated by Whitehead et al, U.S. Patent No. 6,384,979. Claim 7 has been amended to recite that the image display device comprises a support member disposed adjacent the prismatic surface so as to leave a plurality of channels between the prismatic surface and the support member, that the electrophoretic medium is disposed between the prismatic surface and the support member, and the plurality of capsules are disposed within the plurality of channels. Support for these amendments is found, *inter alia*, in Figure 2 and the related description at Paragraph [0055] of the application, which describe an image display device (110) comprising a support member (18) disposed adjacent the prismatic surface (of the reflecting sheet 12) so as to leave a plurality of channels (14) between the prismatic surface and the support member (18), that the electrophoretic medium (22) is disposed between the prismatic surface and the support member (18), and the plurality of capsules (50) are disposed within the plurality of channels (14). No new matter is introduced by these amendments.

Applicants traverse the 35 USC 102 rejection even as to the original form of claim 7 on the grounds that the structures 34A-D in Figure 2B of Whitehead are not appropriately described as "capsules". The structures 34A-D are channels (Whitehead's own term) of indefinite length (note column 5, lines 31-34 of Whitehead), and nothing is said as to how the ends of these channels are sealed. In contrast, the term "capsules" normally implies that a limited volume of fluid is retained within a capsule wall which completely surrounds the limited volume.

A fortiori, applicants traverse the 35 USC 102 rejection as to claim 7 as now amended. Claim 7 now requires a plurality of capsules disposed within the plurality of channels and hence separate from the channel walls. No such capsules discrete from the channel walls are described or even hinted at in Whitehead.

Claims 10 and 11 stand rejected under 35 USC 103(a) as unpatentable over Whitehead. Since claims 10 and 11 depend from claim 7, this rejection is traversed for the same reasons as the 35 USC 102 rejection of claims 7-9, as already discussed above.

Claims 12 and 14 stand rejected under 35 USC 103(a) as unpatentable over Whitehead in view of Webber US-2002/0180687 (the Office Action identifies Webber as U.S. Patent No. 6,384,979, but having regard to Form PTO-892 and the context, it is believed that US-2002/0180687 must be intended). Since claims 12 and 14 depend ultimately from claim 7, this rejection is traversed for the same reasons as the 35 USC 102 rejection of claims 7-9, as already discussed above. Furthermore, as discussed below in detail with reference to claims 15-18, use of Webber as prior art against the present application is precluded by 35 USC 103(c).

Claims 15-18 stand rejected under 35 USC 103(a) as unpatentable over Whitehead in view of Webber US-2002/0180687. This rejection is traversed on the grounds that, having regard to 35 USC 103(c), Webber is not prior art against the present application.

Webber was published December 5, 2002. The present application was filed August 6, 2002. Hence, the only apparent basis for asserting Webber as prior art is 35 USC 102(e)(1). However, 35 USC 103(c) provides (in relevant part) that subject matter developed by another person which qualifies as prior art only under 35 USC 102(e) shall not preclude patentability under 35 USC 103 where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

In the present case, both the present application and Webber are owned by E Ink Corporation. An assignment of this application was recorded in the Office on Reel 13212, Frame 873 *et seq.*, and a copy of the Notice of Recordation is filed herewith as Attachment 1 to this Amendment. Similarly, an assignment of Webber was recorded in the Office on Reel 12541, Frame 561 *et seq.*, and a copy of the Notice of Recordation is filed herewith as Attachment 2 to this Amendment. Finally, the undersigned attorney, who is the Intellectual Property Counsel of E Ink Corporation, and who prepared and filed both the present application and Webber hereby states, of his own personal knowledge, that the inventors of the present application and of Webber were at all relevant times employees of E Ink Corporation under an obligation to assign their inventions to that corporation. Hence, use of Webber as prior art against the present application is precluded by 35 USC 103(c), and the 35 USC 103(a) rejection of claims 15-18 cannot be maintained.

Claim 19 has been amended to incorporate therein the subject matter of former claim 20, and claim 20 has been cancelled. A consequential amendment has been made to the dependency of claim 21.

Claim 19 stands rejected under 35 USC 103(a) as unpatentable over Whitehead in view of Jacobson et al., U.S. Patent No. 6,241,921. Claim 20 stands rejected under 35 USC 103(a) as unpatentable over Whitehead in view of Jacobson et al., U.S. Patent No. 6,241,921 as applied to claim 19, and further in view of Honeyman et al., US Patent Publication No. 2002/0185378. Since claim 19 has been amended to have the same scope as original claim 20, it can apparently now be rejected only on the basis of the Whitehead/Jacobson/Honeyman rejection, and this rejection is traversed on the grounds that, having regard to 35 USC 103(c), Honeyman is not prior art against the present application.

The situation with regard to Honeyman is exactly parallel to that with regard to Webber, as discussed above with reference to claims 15-18. Honeyman was published only on December 12, 2002, after the filing date of the present application.

Hence, Honeyman is only available as prior art against this application, if at all, under 35 USC 102(e). However, Honeyman is assigned to E Ink Corporation, the same assignee as the present application; Attachment 3 to this Amendment is a copy of the Notice of Recordation showing that an Assignment of Honeyman to E Ink Corporation was recorded in the Office on Reel 12907, Frame 398 *et seq.* Furthermore, the undersigned attorney, who prepared and filed both the present application and Honeyman, hereby states, of his own personal knowledge, that the inventors of the present application and of Honeyman were at all relevant times employees of E Ink Corporation under an obligation to assign their inventions to that corporation. Hence, use of Honeyman as prior art against the present application is precluded by 35 USC 103(c), and the 35 USC 103(a) rejection of claim 19 cannot be maintained.

Since claims 21-23 depend from claim 19, they are allowable for the same reasons as claim 19,

Claims 24 and 25 stand rejected under 35 USC 103(a) as unpatentable over Whitehead in view of Harbour et al., U.S. Patent No. 4,272,596. The Office Action states that Whitehead describes the features of claim 24 except that it does not disclose that the volume fraction of the particles in the electrophoretic medium is at least about 50 per cent or greater than 70 per cent, that Harbour discloses the volume fraction of the particles in the electrophoretic medium is at least about 50 per cent or greater than 70 per cent, and that it would have been obvious to one skilled in the art to use a volume fraction of particles in the electrophoretic medium as taught by Harbour in the electrophoretic medium of Whitehead.

This rejection is traversed. More specifically, this rejection is traversed on the grounds that (a) Harbour does not in fact disclose a volume fraction of *electrophoretic particles* of at least about 50 per cent by volume as required by claims 24 and 25; and (b) there is no logical way to combine Harbour and Whitehead.

Harbour describes a variation on what is normally described as a "single particle/dye electrophoretic medium"; such an electrophoretic medium has a single type

of electrophoretic particle suspended in a colored (dyed) suspending fluid cf. column 1, lines 54-57 of Harbour. Harbour proposes to replace the dye in the suspending fluid with colloidal sized particles, preferably supplied by a so-called ferrofluid. Harbour further teaches that conventional electrophoretic particles are suspended in the ferrofluid so that they can move therethrough when an electric field is applied (see the drawing and the paragraph bridging columns 3 and 4 of Harbour). Harbour suggests that the concentration of the *colloidal particles*, not the electrophoretic particles, be in the range of 5 to about 75 per cent by *weight*; since the iron oxide particles are stated to be black they must presumably be magnetite, Fe_3O_4 , specific gravity 5.18 (see, for example, the Chemical Rubber Handbook), and assuming a specific gravity for the organic suspending fluid not greater than 1, 75 per cent by weight of iron oxide translates to about 37 per cent by volume. More importantly, Harbour does not suggest a proportion of *electrophoretic* particles remotely approaching 50 per cent by volume; Harbour never defines a preferred range of ratios of electrophoretic particles to ferrofluid, and the Examples use 0.2 g of titanium dioxide to 1 ml of ferrofluid which, given the difference in densities, must represent less than 15 per cent by volume of titanium dioxide electrophoretic particles. Thus, Harbour does not suggest using at least about 50 per cent by volume of electrophoretic particles, as required by present claims 24 and 25.

Furthermore, there is no logical way to combine Harbour and Whitehead. As already noted, Harbour describes a variation on a single particle/dye electrophoretic medium such that a single type of electrophoretic particle is suspended in a colored suspending fluid, the color being provided by colloidal particles. Whitehead describes an image display in which total internal reflection at the surfaces of prisms 16A, 16B, 16C is frustrated by bringing electrophoretic particles adjacent these surfaces. There is no suggestion in Whitehead that the electrophoretic medium contain anything other than a suspending fluid and a single type of electrophoretic particle; in particular, there is no suggestion that the electrophoretic medium contain any dye or colloidal particle. This is hardly surprising, since the constant presence of dye or colloidal particles adjacent the

surfaces of the prisms would tend to hinder total internal reflection at these surfaces in the optical state when such total internal reflection is desired. Accordingly, there is no way to use the Harbour type of medium in the Whitehead image display.

Claims 26 and 27 stand allowed.

Claims 28 and 29 stand rejected under 35 USC 103(a) as unpatentable over Whitehead in view of Herb et al., US Patent Publication No. 2003/0132908. This rejection is traversed on the grounds that, having regard to 35 USC 103(c), Herb is not prior art against the present application.

The situation with regard to Herb is exactly parallel to that with regard to Webber, as discussed above with reference to claims 15-18. Herb was published only on July 17, 2003, after the filing date of the present application. Hence, Herb is only available as prior art against this application, if at all, under 35 USC 102(e). However, Herb is assigned to E Ink Corporation, the same assignee as the present application; Attachment 4 to this Amendment is a copy of the Notice of Recordation showing that an Assignment of Herb to E Ink Corporation was recorded in the Office on Reel 13878, Frame 219 *et seq.* Furthermore, the undersigned attorney hereby states, of his own personal knowledge, that the inventors of the present application and of Herb were at all relevant times employees of E Ink Corporation under an obligation to assign their inventions to that corporation. Hence, use of Herb as prior art against the present application is precluded by 35 USC 103(c), and the 35 USC 103(a) rejection of claims 28 and 29 cannot be maintained.

Claims 30-37 stand allowed.

Claim 38 stands rejected under 35 USC 102(e) as being anticipated by Whitehead. This rejection is traversed. More specifically, this rejection is traversed on the grounds that Whitehead does not disclose an electrophoretic medium having electrophoretic particles comprising at least one light-scattering or light-absorptive center disposed within a light transmissive matrix, whereby, when the particles are disposed closely adjacent the prismatic surface, most of the light passing through the reflective

sheet passes into the particles and is scattered or absorbed by the light-scattering or light-absorptive center, as required by claim 38.

The Office Action states that the type of particle required by claim 38 is described in the paragraph at column 10, line 56 to column 11, line 16 of Whitehead. With respect, this is incorrect. As explained in Paragraph [0067] of this application, the Whitehead systems may be modified by using particles containing multiple absorption or scattering centers, i.e., a "raisin bun" particle in which a plurality of small light-scattering and/or light-absorptive centers (formed, for example, from carbon black) are distributed within a light-transmissive matrix. If such particles are present in a Whitehead system adjacent the surface at which TIR would otherwise occur, and the refractive index of the matrix is not too dissimilar to that of the material forming the surface, the light reaching the surface will enter the matrix and will be scattered and/or absorbed by the various centers, so that essentially none of the light emerging from the surface re-enters that surface. The optical effect of the particle will thus be identical to frustrated TIR, although achieved by a different mechanism. This type of particle permits a wider choice of materials to be used in Whitehead systems. Thus, the type of particles defined in claim 38 do not, strictly speaking, frustrate TIR, but achieves the same result by a different mechanism, namely allowing light to enter the particle and thereafter scattering or absorbing this light at the light-scattering and/or light-absorptive centers.

Whitehead does not disclose an electrophoretic particle comprising a light transmissive matrix and one or more light-scattering and/or light-absorptive centers. In particular, the electrophoretic particles described in the paragraph at column 10, line 56 to column 11, line 16 of Whitehead are not of this type. Column 10, line 62 specifically states that the electrophoretic particles must move inside the evanescent wave region to cause their effect, thus showing that the Whitehead electrophoretic particles effect "classical" total internal reflection rather than the type of light absorption effected by the particles defined in claim 38.

Amundson et al.
Serial No. 10/064,779
Amendment of May 11, 2004
Page 24

For the foregoing reasons, the 35 USC 102(e) rejection of claim 38 is unjustified and should be withdrawn.

Reconsideration and allowance of all claims now present is respectfully requested.

Prior to the present Amendment, this application contained 38 claims, including 12 independent claims, and the relevant fees had been paid for all these claims. The application now contains 37 claims, including 12 independent claims. Accordingly, it is believed that no additional claim fees are required in connection with this Amendment.

Since the normal period for responding to the Office Action expired April 23, there is filed herewith a Petition for a one month extension of this period.

Respectfully submitted



David J. Cole
Registration No. 29629

E INK Corporation
733 Concord Avenue
Cambridge MA 02138

Telephone (617) 499-6069
Facsimile (617) 499-6200
E-mail dcole@eink.com